What is claimed is:

1. A magnetic resonance imaging system for producing an image based on data acquired from an object to be imaged, the data being acquired using a pulse sequence applied to the object and formed to include a pre-pulse, an RF excitation pulse, an encoding gradient pulse, and a reading gradient pulse, the magnetic resonance imaging system comprising:

a memorization unit configured to memorize information indicative of the pulse sequence

of which encoding gradient pulse has an encoding amount determined to allow a data acquisition position in a k-space to be directed outward from a center of the k-space,

of which a train of pulses including the RF excitation pulse, the encoding gradient pulse, and the reading gradient pulse is repeated to allow the number of times of data acquisition in the k-space to become larger as approaching to a central region of the k-space, and

of which pre-pulse is formed to be reduced in an application rate to the RF excitation pulse as approaching to an outward position in the k-space;

a scan unit configured to scan the object using the pulse sequence memorized in the memorization unit;

an acquisition unit configured to acquire data corresponding to an MR signal emanating from the object in response to the scan performed by the scan unit and to map the data in the k-space; and

an image production means configured to reconstruct the data mapped in the k-space by the acquisition unit so that the image is produced.

2. The magnetic resonance imaging system according to claim 1, wherein the pulse sequence memorized in the memorization unit is

formed to have the pre-pulse is applied only to data acquisition in a desired central region of the k-space.

3. The magnetic resonance imaging system according to claim 2, wherein the pre-pulse is one selected from a fat suppression pulse, an IR (Inversion Recovery) pulse, an MT (Magnetic Transfer) pulse, a pre-saturation pulse, and a tagging (Tag) pulse.

4. The magnetic resonance imaging system according to claim 3, wherein the pulse sequence consists of a two-dimensional or three-dimensional FE (Gradient Echo)-system pulse train, the FE system including an FE method and an FFE (Fast FE) method.

5. The magnetic resonance imaging system according to claim 1, wherein the pulse sequence memorized in the memorization unit is formed to have the pre-pulse applied such that, in a desired central region of the k-space, the pre-pulse is applied in a one to one correspondence manner compared to the RF excitation pulse, while, in an outer region of the desired central region, the pre-pulse is applied intermittently at a rate increasing as advancing outward in the k-space.

6. The magnetic resonance imaging system according to claim 5, wherein the pre-pulse is one selected from a fat suppression pulse, an IR (Inversion Recovery) pulse, an MT (Magnetic Transfer) pulse, a pre-saturation pulse, and a tagging (Tag) pulse.

7. The magnetic resonance imaging system according to claim 6, wherein the pulse sequence consists of a two-dimensional or three-dimensional FE (Gradient Echo)-system pulse train, the FE system including an FE method and an FFE (Fast FE) method.

8. The magnetic resonance imaging system according to claim 1, wherein the pre-pulse is one selected from a fat suppression pulse, an IR (Inversion Recovery) pulse, an MT (Magnetic Transfer) pulse, a pre-saturation pulse, and a tagging (Tag) pulse.

9. The magnetic resonance imaging system according to claim 8, wherein the pulse sequence consists of a two-dimensional or three-dimensional FE (Gradient Echo)-system pulse train, the FE system including an FE method and an FFE (Fast FE) method.

10. The magnetic resonance imaging system according to claim 1, wherein the pulse sequence consists of a two-dimensional or three-dimensional FE (Gradient Echo)-system pulse train, the FE system including an FE method and an FFE (Fast FE) method.

11. A method for acquiring data from an object to be imaged in magnetic resonance imaging for producing an image based on the data mapped in a k-space, the data being acquired using a pulse sequence applied to the object and formed to include a pre-pulse, an RF excitation pulse, an encoding gradient pulse, and a reading gradient pulse, the method comprising the steps:

scanning the object using the pulse sequence

of which encoding gradient pulse has an encoding amount determined to allow a data acquisition position in the k-space to be directed outward from a center of the k-space,

of which a train of pulses including the RF excitation pulse, the encoding gradient pulse, and the reading gradient pulse is repeated to allow the number of times of data acquisition in the k-space to become larger as approaching to a central region of the k-space, and

of which pre-pulse is formed to be reduced in an application rate to the RF excitation pulse as approaching to an outward position in the k-space;

receiving an MR (magnetic resonance) signal emanating from the object in response to the scanning; and

mapping data corresponding to the MR signal into the k-space.

12. A program installed in a magnetic resonance imaging system and executed by a computer of the magnetic resonance imaging system in order to acquire data from an object to be imaged using a pulse sequence formed to include a pre-pulse, an RF excitation pulse, an encoding gradient pulse, and a reading gradient pulse, the acquired data being in a k-space,

wherein the pulse sequence is formed such that

the encoding gradient pulse has an encoding amount determined to allow a data acquisition position in the k-space to be directed outward from a center of the k-space,

a train of pulses including the RF excitation pulse, the encoding gradient pulse, and the reading gradient pulse is repeated to allow the number of times of data acquisition in the k-space to become larger as approaching to a central region of the k-space, and

the pre-pulse is formed to be reduced in an application rate to the RF excitation pulse as approaching to an outward position in the k-space.

13. The program according to claim 12, the pulse sequence is formed to have the pre-pulse applied such that, in a desired central region of the k-space, the pre-pulse is applied in a one to one correspondence manner compared to the RF excitation pulse, while, in an outer region of the desired central region, the pre-pulse is applied intermittently at a rate increasing as advancing outward in the k-space.

14. The program according to claim 13, wherein the pre-pulse is one selected from a fat suppression pulse, an IR (Inversion Recovery) pulse, an MT (Magnetic Transfer) pulse, a pre-saturation pulse, and a tagging (Tag) pulse.

15. The program according to claim 12, wherein the pre-pulse is one selected from a fat suppression pulse, an IR (Inversion Recovery) pulse, an MT (Magnetic Transfer) pulse, a pre-saturation pulse, and a tagging (Tag) pulse.

16. The program according to claim 12, wherein the pulse sequence consists of a two-dimensional or three-dimensional FE (Gradient Echo)-system pulse train, the FE system including an FE method and an FFE (Fast FE) method.